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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/822,005	04/12/2004	Hiroko Abe	12732-230001	1587
26171	7590	04/18/2006	EXAMINER	
FISH & RICHARDSON P.C. P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			LANE, JEFFREY D	
			ART UNIT	PAPER NUMBER
			2828	

DATE MAILED: 04/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/822,005

Applicant(s)

ABE ET AL.

Examiner

Jeffrey D. Lane

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance: See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/12/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Specification***

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### ***Claim Objections***

2. Claim 2 is objected to because of the following informalities: "an film" is grammatically incorrect. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claims 1, 2, 3, 6, 7, and 8 recites the limitation "the excimer state". There is insufficient antecedent basis for this limitation in the claim.

For examination purposes the claims will be interpreted as "an excimer state" where it says "the excimer state".

### ***Claim Rejections - 35 USC § 102***

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Roberts et al. (US 5659567).

As for claim 1 Roberts discloses in figure 14, A laser oscillator comprising: a laser medium (see Column 17 lines 51-54) in which a phosphorescent material is dispersed at a concentration of not less than 10 wt % into a host material; and an optical resonator 402 for amplifying luminescence from the excimer state of the phosphorescent material (See Column 18 line 66- column 19 line 11).

As for claim 2 Roberts discloses in figure 10, A laser oscillator comprising: a film containing a laser medium 310 formed on a substrate 308; and an optical resonator (between 308 or 306), wherein the laser medium includes a host material and a phosphorescent material dispersed into the host material at a concentration of not less than 10 wt % (see Column 17 lines 51-54), and wherein in luminescence from the excimer state of the phosphorescent material, unidirectional light across the film containing the laser medium is amplified by the optical resonator (See Column 18 line 66- column 19 line 11). The mirror around the crystal contains the medium; the crystal is a substrate, and the light between the mirrors would be further amplified. Therefore the limitations of the claim are met.

As for claim 3 Roberts discloses in figure 10, A laser oscillator comprising: a film (See Column 14 line 60- Column 15 line 2) containing a laser medium 310 formed on a substrate 308; and an optical resonator, wherein the laser medium includes a host

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material and a phosphorescent material dispersed into the host material at a concentration of not less than 10 wt % (see Column 17 lines 51-54), and wherein in luminescence from the excimer state of the phosphorescent material, unidirectional light contained within a surface composed of the film containing the laser medium is amplified by the optical resonator. The mirror around the crystal contains the medium; the crystal is a substrate, and the light between the mirrors would be further amplified. Therefore the limitations of the claim are met.

As for claims 4 and 5 Roberts discloses, the laser oscillator comprises an excitation light source, and the phosphorescent material is excited to the excimer state by excitation light emitted from the excitation light source (See column 14 lines 34&35).

4. Claims 1-3, and 6-11, are rejected under 35 U.S.C. 102(e) as being anticipated by Ma et al. (US 6687266).

As for claim 1 Ma discloses, A laser oscillator comprising: a laser medium 135 in which a phosphorescent material (see column 8 line 66 – column 9 line 2) is dispersed at a concentration of not less than 10 wt % (See Column 5 lines 35-40) into a host material; and an optical resonator for amplifying luminescence from the excimer state of the phosphorescent material. Formula 7 is a subspecies of formula 3 (See Column 11 lines 9&10), and 3 is a subspecies of formula 2 (See Column 9 lines 39-46). Note making the emissive layer out a single material would make the luminescent material more than 10% and therefore read on the claim.

As for claim 2 Ma discloses, A laser oscillator comprising: an film containing a laser medium (135 or 220) formed on a substrate (110 or 210); and an optical resonator, wherein the laser medium (135 or 220) includes a host material and a phosphorescent material dispersed into the host material (See Column 5 lines 30-35) at a concentration of not less than 10 wt % (See Column 5 lines 35-40), and wherein in luminescence from the excimer state of the phosphorescent material, unidirectional light across the film containing the laser medium (135 or 220) is amplified by the optical resonator (See column 5 lines 14-23 and Column 6 lines 3-12). Mg:Ag has a partially reflective partially transmissive (See figure 20 of US 5703436) and MTDATA has a reflectivity and transmitting property (See Paragraph [0058] of US 2003/0194513). Therefore the light would be trapped and amplified between these layers and amplified also these materials would also have a transparency property as well. Therefore the limitations of the claim are met.

As for claim 3 Ma discloses, A laser oscillator comprising: a film containing a laser medium (135 or 220) formed on a substrate (110 or 210); and an optical resonator, wherein the laser medium (135 or 220) includes a host material and a phosphorescent material dispersed into the host material (See Column 5 lines 30-35) at a concentration of not less than 10 wt % (See Column 5 lines 35-40), and wherein in luminescence from the excimer state of the phosphorescent material, unidirectional light contained within a surface composed of the film containing the laser medium (135 or 220) is amplified by the optical resonator (See column 5 lines 14-23 and Column 6 lines 3-12).

As for claim 6 Ma discloses, A laser oscillator comprising: a light emitting element 135 formed on a substrate (110 or 210); and an optical resonator, wherein the light emitting element includes a luminescent layer (135 or 220), an anode (115 or 230) and a cathode (160 or 215), the luminescent layer (135 or 220) is interposed between the anode (115 or 230) and the cathode (160 or 215), wherein the luminescent layer (135 or 220) includes a host material and a phosphorescent material dispersed into the host material at a concentration of not less than 10 wt %, wherein the anode (115 or 230) and the cathode (160 or 215) include a light transmitting property (See Column 4 lines 5 and 66-67), and wherein in luminescence from the excimer state of the phosphorescent material, unidirectional light across the luminescent layer (135 or 220) is amplified by the optical resonator.

As for claim 7 Ma discloses, A laser oscillator comprising: a light emitting element formed on a substrate (110 or 210); and an optical resonator, wherein the light emitting element includes a luminescent layer (135 or 220), an anode (115 or 230), and a cathode (160 or 215), the luminescent layer (135 or 220) is interposed between the anode (115 or 230) and the cathode (160 or 215), wherein the luminescent layer (135 or 220) includes a host material and a phosphorescent material dispersed into the host material at a concentration of not less than 10 wt %, and wherein in luminescence from the excimer state of the phosphorescent material, unidirectional light contained within a surface composed of the luminescent layer (135 or 220) is amplified by the optical resonator (See column 5 lines 14-23 and Column 6 lines 3-12).

As for claim 8, A laser oscillator comprising: a light emitting element formed on a substrate (110 or 210); and a plurality of reflective materials, wherein the light emitting element includes a luminescent layer (135 or 220), an anode (115 or 230) and a cathode (160 or 215), the luminescent layer (135 or 220) is interposed between the anode (115 or 230) and the cathode (160 or 215), wherein the luminescent layer (135 or 220) includes a host material and a phosphorescent material dispersed into the host material at a concentration of not less than 10 wt %, wherein the anode (115 or 230) includes a light transmitting property, wherein the luminescent layer (135 or 220) is interposed between the cathode (160 or 215) and the plurality of reflective materials, and wherein in luminescence from the excimer state of the phosphorescent material, unidirectional light across the luminescent layer (135 or 220) is amplified by the cathode (160 or 215) and the plurality of reflective materials.

As for claims 9-11, a hole transporting layer 225 contacting with the luminescent layer (135 or 220) is formed between the anode (115 or 230) and the luminescent layer (135 or 220), the hole transporting layer 225 has an ionization potential lower than that of the luminescent layer (135 or 220) or the host material, or the hole transporting layer 225 has an ionization potential higher than that of the luminescent layer (135 or 220) or the host material with an energy gap of not more than 0.4 eV (See Column 5 lines 14-23 and 45). Alq<sub>3</sub> has an ionization potential of 5.4 eV and MTDATA has an ionization potential of 5.1 eV. Therefore the limitations of the claim are met.



***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 12-17 rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ma et al. (US 6687226).

As for claims 12-17 Ma discloses all that pertains to claims 1, 2, 3, 6, 7, and 8. Ma discloses several materials that phosphoresce in the excimer state (See Table 1). Ma further discloses, "Emissive layer 135 may comprise a single material that combines transport and emissive properties. Whether the emissive material is a dopant or a major constituent, emissive layer 135 may comprise other materials, such as dopants that tune the emission of the emissive material. Emissive layer 135 may include a plurality of emissive materials capable of, in combination, emitting a desired spectrum of light." (Column 5 lines 35-42). If not inherent in the disclosed materials, it would be obvious to use different materials to optimize the wavelength characteristics. Examples of materials that can be used are given by Lamamsky et al. (US 6939624), See Column 17 and Column 20 lines 48-54.

***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The values for the ionization potentials for MTDATA and Alq<sub>3</sub> are

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found on US 2002/0071963 Paragraph [0107] and 2005/0048317 Paragraph [0061] respectively.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey D. Lane whose telephone number is (571) 272-1676. The examiner can normally be reached on Monday thru Friday 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeffrey D Lane  
Examiner  
Art Unit 2828

JDL



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PRIMARY EXAMINER